## ASSIGNMENT 14

Textbook Assignment: "Nondestructive Inspections, Welding, and Heat Treatment," chapter 15, pages 15-1 through 15-45.

- What manual covers the theory and 14-6. general applications of various methods of NDI?
  - NAVAIR 01-1A-12
  - 2. NAVAIR 01-1A-16
  - 3. NAVAIR 01-1A-17
  - 4. NAVAIR 01-1A-20
- Currently active NDI technicians 14-2. are required to be recertified at least how often?

  - Every 5 years
     Every 2 years
  - 3. Every 3 years
  - 4. Every 4 years
- NDI operators must use the NDI 14-3. method(s) for which they are certified at least how often?
  - Once a month
  - 2. Twice a month
  - 3. Once a quarter
  - 4. Twice a quarter
- What command has cognizance over 14-4. the NDI program?
  - 1. NADOC
  - 2. NADEP
  - 3. NAESU
  - 4. NAVAIR
- Aircraft controlling custodians have all EXCEPT which of the following NDI program responsibilities?
  - Designating NDI specialist as required
  - Designating an NDI program manager
  - 3. Providing NDI training for NADEPs as requested
  - 4. Ensuring that NDI equipment, laboratories, and personnel are audited as required

- The detection of flaws or defects in material with a high degree of accuracy and reliability by the use of NDI methods depends primarily on which of the following factors?
  - The availability of a trained and experienced technician
  - 2. The availability of a large and well-equipped facility
  - 3. The type of material being inspected
  - 4. The detection method used
- 14-7. You are performing a process that consists of inducing a magnetic field into a part and applying magnetic particles in a liquid suspension or dry powder. What type of NDI inspection are you conducting?
  - Ultrasonic
  - 2. Radiographic
  - 3. Eddy current
  - 4. Magnetic particle
- 14-8. Which of the following magnetization methods are used in magnetic particle inspections?
  - 1. Linear only

  - 2. Circular only3. Circular and longitudinal only
  - 4. Linear, circular, and longitudinal
- 14-9. To magnetize both the inside and outside of parts that are hollow or tubelike, you should place them on a copper bar and pass current through them.
  - 1. True
  - 2. False
- 14-10. The particles used in magnetic particle testing must possess which of the following qualities?
  - 1. High permeability and high retentivity
  - 2. High permeability and low retentivity
  - 3. Low permeability and high retentivity
  - 4. Low permeability and low retentivity

- 14-11. Concerning a radiographic NDI 14-17. Training programs and testing inspection, all EXCEPT which of the following statements are desiring to qualify as aircraft desiring to qualify and qualify as aircraft desiring to qualify as aircraft desiring to qualify as aircraft desiring to qualify and qualify as aircraft desiring to qualify as aircraft desiring to qualify and qualify as aircraft desiring to qualify and qualify and qualify are qualificated at qualify and qualify as aircraft desiring to qualify and qualify and qualify and qualify are qualificated at qualify and qualify and qualify and qualify and qualify are qualificated at qualify and qualify and qualify and qualify are qualify and correct?
  - 1. It is one of the most expensive
  - 2. It can be used on nonmetallic materials

  - 3. It is the least sensitive method of crack detection
    4. It should only be used on items that are accessible or favorably oriented
- If the whole body of a person is exposed to a very large dose of radiation, what would most likely be the result?
  - 1. Death
  - 2. Cancer
  - 3. Leukemia
  - 4. Skin damage
- Ultrasonic NDI inspection 14-13. information is displayed by what means?

  - Video tape
     Photographic film
  - Photographic film
     Cassette tape recorder
  - 4. Cathode-ray tube screen
- What ultrasonic NDI inspection 14-14. method projects a beam of vibrations that travel along or 14-20. just below the surface of the material?
  - 1. Immersion
  - 2. Angle beam
  - 3. Surface wave
  - 4. Straight beam
- What type of eddy current probe or 14-21. On a single-stage oxygen 14-15. coil is used on plates, sheets, or irregular-shaped parts?

  - Inside probe
     Surface probe
  - 3. Encircling coil
  - 4. Bobbin-type coil
- 14-16. The developer used in a dye penetrant NDI inspection serves what purpose?
  - It neutralizes the dye
  - It neutralizes the dye
     It speeds the drying of the penetrant
  - 3. It helps draw any trapped penetrant from the discontinuities
  - 4. It aids the penetrant in filling any discontinuities that are below the surface of the material

- facilities for those personnel desiring to qualify as aircraft welders are available at which of the following commands?
  - 1. NADOC
  - 2. NADEP
  - 3. NAESU
  - 4. NATTC
- 14-18. The groups of metals for which separate and distinct welding certifications are required are specified in what manual?
  - 1. NAVAIR 01-1A-11
  - 2. NAVAIR 01-1A-12
  - 3. NAVAIR 01-1A-16 4. NAVAIR 01-1A-34

  - In the oxyacetylene gas welding 14-19. process, the welding torch is used for which of the following purposes?
    - To provide a clamping device 1. for the gas tubes and rods
    - 2. To direct the flame against the metal only
    - 3. To mix the gases in proper proportions only
    - 4. To direct the flame against the metal and mix the gases in proper proportions
  - Which of the following statements pertaining to oxygen is NOT correct?
    - 1. It is flammable
    - 2. It is colorless
    - 3. It is tasteless
    - 4. It is heavier than air
  - regulator, the outlet pressure gauge provides what indication?
    - The working pressure 2.
    - The mixing ratio of the gases
    - 3. The amount of oxygen in the cylinder
    - 4. The amount of acetylene in the cylinder
- 14-22. When burned with oxygen, acetylene produces a flame in what temperature range?
  - 1. 1,200 to 3,300°F 2. 2,850 to 4,500°F
  - 3. 5,700 to 6,300°F
  - 4. 6,150 to 7,500°F

- 14-23. than the acetylene pressure in what type of oxyacetylene welding than the acetylene pressure in torch?
  - The jet type
  - The injector type 2.
  - The high-pressure type 3.
  - The equal-pressure type
- On oxyacetylene welding equipment, 14-24. what color and thread type identifies the (a) oxygen hose and (b) acetylene hose?
  - (a) Green with right-handed threads
    - (b) red with left-handed threads
  - (a) Green with left-handed threads
    - (b) red with right-handed threads
  - (a) Black with right-handed threads
    - (b) green with left-handed threads
  - (a) Red with left-handed 4. threads
    - (b) black with right-handed threads
- 14-25. when welding bronze with an oxyacetylene welding rig?
  - Neutral
  - 2. Oxidizing 3. Nitrating

  - 4. Carburizing
- 14-26. If you light the acetylene only on an oxyacetylene welding torch, the flame will be what color?
  - Red 1.

  - 2. Blue 3. Yell Yellow
  - 4. Orange
- A torch flashback can be caused by all EXCEPT which of the following 14-35. In the GTA welding process, the 14-27. factors?
  - 1. Loose connections
  - 2. Improper pressures
  - Overheating of the torch
  - Touching the tip of the torch against the work
- 14-28. When torch welding, you should hold the white cone of the flame at what prescribed distance from the surface of the metal?
  - 1. 1/8 in.
  - 2. 1/4 in.
  - $3. \quad 3/8 \text{ in.}$
  - 4. 1/2 in.

- The oxygen pressure is much higher 14-29. What welding method should you use when welding material more than 1/8 inch thick?
  - Puddle
  - 2. Ripple
  - Backhand 3.
  - 4. Forehand

IN ANSWERING QUESTIONS 14-30 THROUGH 14-33, SELECT FROM CULUMIN B IIIE LINES JOINT THAT MATCHES ITS DESCRIPTION IN COLUMN A. 14-33, SELECT FROM COLUMN B THE BASIC WELD

	A. DESCRIPTION	В.	WELD JOINT
14-30.	Made by joining two members	1.	Tee
	located	2.	Edge
	approximately at right angles to each other	3.	Butt
14-31	Made by welding	4.	Corner

- 14-31. Made by welding two or more parallel members
- 14-32. Made by welding two plates whose surfaces are 90° of each other at the joint
- What type of flame should you use 14-33. Made by joining two pieces of material-edge to edge without any overlapping
  - 14-34. In the GTA welding process, the shielding gas is used for which of the following purposes?
    - 1. To reflect the heat from the electrode
    - 2. To produce a more concentrated heat to the weld zone
    - 3. To lay the weld bead faster and lengthen the weld arc
    - 4. To protect the molten weld metal from atmospheric contamination
    - greatest concentration of heat at the electrode results from what arrangement of (a) current and (b) polarity?
      - (a) dc (b) reverse
      - 2. (a) dc (b) straight
      - 3. (a) ac (b) reverse
      - 4. (a) ac (b) straight

- 14-36. You should use water-cooled GTA 14-42. In the GMA welding process, what welding torches when welding with basic welding position is current above what prescribed amperage?
  - 50 amp 1.
  - 2. 100 amp
  - 3. 150 amp
  - 4. 200 amp
- 14-37. What is the most popular gas used in the GTA welding process?
  - 1. Radon 2. Argon

  - 3. Helium
  - 4. Nitrogen
- 14-38. To strike the arc using an ac GTA welding machine, you should angle the end of the torch toward the work so that the electrode is at what prescribed distance above the plate?
  - 1. 1/8 in.
  - 2. 1/4 in.
  - $3. \quad 3/8 \text{ in.}$
  - 4. 1/2 in.
- 14 39. In the GMA welding process, what factor determines the melting rate of the filler wire?
  - 1. The speed rate of the welder
  - 2. The diameter of the filler
  - current
  - 4. The size of the area to be welded
- When you are GMA welding with a 2. Its lightest section constant-voltage power source, 3. Its heaviest section what condition will occur as a 4. Its overall length an 14-40. result of any changes in the length of the welding arc?

  - speed
  - 4. The welding gun will automatically stop delivering 14-47. To relieve the the electrode until the problem has been resolved
- In the GMA welding process, what 14-48. To reduce type of shielding gas is preferred residual stresses 14-41. for welding thick materials?
  - 1. Neon
  - 2. Argon
  - 3. Helium
  - 4. Hydrogen

- preferred for most joints because it improves the molten metal flow, bead contour, and gives better gas protection?
  - 1. Flat
  - 2. Vertical
  - 3. Overhead 4. Horizontal
- 14-43. For safety purposes, when welding cables must reach some distance

from the machine, you should run the cables overhead, if possible.

- 1. True
- 2. False
- 14-44. What term refers to metals with iron bases?
  - 1. Nonferrous
  - 2. Ferrous
  - 3. Ironic
  - 4. Alloy
- 14-45. The heat-treatment cycle includes all EXCEPT which of the following events?
  - Soaking
     Heating

  - 3. Cooling
  - 4. Misting

A. USE

- 3. The level of the welding 14-46. When steel parts have an uneven cross section, what factor determines the soaking period?

  - Its total weight
     Its lightest sec

  - 4. Its overall length and width

B. PROCESS

1. The shielding gases will automatically shut off 14-49, SELECT FROM COLUMN B THE HEAT2. The welding current will automatically change LISTED IN COLUMN A. NOT ALL ITEMS LISTED IN COLUMN B WILL BE USED.

# 1. Normalizing strains induced during hardening 2. Annealing 3. Tempering or induce 4. Case softness hardening

14-49. For parts that require a wearresistant surface

- 14-50. At ordinary temperatures, the carbon in steel exists in the form of iron carbide particles. These particles are known by what name?
  - 1 Cordite
  - 2. Ferrite
  - 3. Pearlite
  - 4. Austenite
- 14-51. In the heat-treatment process of steel, the element that normally has the greatest influence is silicon.

  - True
     False

IN ANSWERING QUESTION 14-52, REFER TO TABLE 15-1 IN THE TEXTBOOK.

- 14-52. What color is steel at 1,825°F?
  - 1. Lemon
  - 2. Salmon
  - Orange 3.
  - Light lemon
- When water is used as a quenching 14-53. medium for steel, the water bath should be held at what prescribed temperature?
  - 1. 32°F
  - 2. 48°F
  - 55°F 3.
  - 65°F 4.
- 14-54. When steel is heated above its critical temperature and then slowly cooled, what is the final product called?
  - 1. Sorbite
  - 2. Pearlite
  - 3. Troostite
  - 4. Martensite
- 14-55. After welding a ferrous metal, you should use the normalizing process of heat treatment for what reason?
  - 1. To reduce its carbon content
  - To induce internal stresses 2.
  - To remove all strains 3.
  - To make it harder

- 14-56. Which of the following carburizing methods produces only a thin case?
  - 1. Pack

  - Gaseous
     Nitriding
  - 4. Cyaniding
- What prescribed temperature is 14-57. required for nitriding steel parts?
  - 950°F 1.
  - 2. 1,150°F
  - 3. 1,300°F
  - 4. 1,400°F
- 14-58. Aluminum alloys should be heated by the use of which of the following methods?
  - 1. An air furnace
  - 2. A molten salt bath only

  - An electric furnace only
     A molten salt bath or an electric furnace
- 14-59. When a nonferrous part is quenched, what is the maximum recommended time between the part's removal from the heat and immersion?
  - 10 sec 1.
  - 15 sec 2.
  - 20 sec 3.
  - 4. 25 sec
- 14-60. When annealing an aluminum part in a salt bath, you should use equal parts of which of the following chemicals?
  - Epsom salt and sodium nitrate
  - Epsom salt and silver nitrate
  - 3. Potassium nitrate and baking
  - 4. Potassium nitrate and sodium nitrate

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